# IC250: Lab assignment 5

HackerRank link: `https://www.hackerrank.com/lab-5-1-1`

1. **Stack implementation using arrays.**

   A stack is a which supports last-in-first-out retrieval. Stacks can be easily implemented using arrays.

   Create a stack ADT with the following functions. The stack deals with strings.

```
// create stack
void create(stack *s);
// push a string into stack
void push(stack *s, char *x);
// pop the top of the stack
char* pop(stack *s);
// return the top of stack, without popping
char* peek(stack s);
// is the stack empty?
int isEmpty(stack *s);
// return the number of elements in the stack
int getSize(stack s);
```

   Then create a driver program which accepts a command code and performs stack operations. More details are provided in HackerRank.

2. **Queue implementation using arrays.**

   A queue is a container which supports first-in-first-out retrieval. Queues can be easily implemented using arrays.

   Create a queue ADT with the following functions. The queue deals with strings.

```
// create queue
void create(queue *q);
// enqueue a char
void enqueue(queue *q, char *x);
// dequeue
char* dequeue(queue *q);
// return the head and tail, without changing the contents of the queue
char** headtail(queue q)
// is the queue empty?
int isEmpty(queue *q);
// return the number of elements in the queue
int getSize(queue q);
```

   Then create a driver program which accepts a command code and performs queue operations. More details are on HackerRank.

3. The C standard library function `qsort` can be used to effectively sort arbitrary items. Use `qsort` and sort the data records provided. The sort key is specified along with the input. For more details, see HackerRank.